

Source Reduction

What Is Source Reduction?

Americans crave convenience—but at what cost? American households have more discretionary income than most households worldwide, spending more on products that create more waste. Over the last 40 years, the amount of waste each person creates has almost doubled from 2.7 to 4.4 pounds per day (that is 1,606 pounds per person per year!) (EPA, 2003). Though reusing, recycling, and composting are all important methods of reducing the amount of waste produced, the most effective way to stop this trend is by preventing the production of materials that could become waste.

Source reduction, also known as **waste prevention**, is the practice of designing, manufacturing, purchasing, or using materials (such as products and packaging) in ways that reduce the amount or toxicity of waste. Source reduction can help reduce waste disposal and handling costs because it avoids the costs of **recycling**, municipal **composting**, **landfilling**, and **combustion**. It also conserves **natural resources** and reduces **pollution**. In 2000, Americans source reduced (prevented) 55.1 million tons of solid waste (EPA, 2003)

Preventing waste before it is generated is a common-sense way to save financial and natural resources, as well as reduce pollution. That is why EPA encourages consumers, businesses, and governments to make source reduction their first priority in waste management practices. For waste that cannot be prevented, recycling and composting are the next best choices. (See the Teacher Fact Sheet titled *Recycling* on page 101 for more information on recycling.)

Waste is generated throughout the life cycle of a product—from extracting raw materials, to transporting materials, to processing and manufacturing goods, to using and disposing of products. Manufacturers that reuse materials in

Key Points

- Source reduction, also known as waste prevention, means reducing waste at the source. It can take many different forms, including reusing or donating items, buying in bulk, reducing packaging, redesigning products, and reducing toxicity.
- Source reduction also is important in manufacturing. Lightweighting of packaging, reuse, and remanufacturing are all becoming more popular business trends. Purchasing products that incorporate these features supports source reduction.
- Source reduction can save natural resources, reduce pollution, reduce the toxicity of our waste, and save money for consumers and businesses alike.
- Incorporating source reduction into daily practices can require some challenging but worthwhile lifestyle changes.

the production process or that use less material to manufacture products can decrease waste dramatically. Other ways that manufacturers practice source reduction include:

- Reduce the amount of packaging in the manufacture of items.
- Reduce the amount of toxic components in a product or use smaller quantities of items with high toxicity.
- Reuse parts in the manufacture of a product.
- Redesign products to make them more modular. This allows broken or unusable components to be replaced rather than discarding the entire item.

Source Reduction Facts

- Since 1977, the weight of 2-liter plastic soft drink bottles has been reduced from 68 to 51 grams each. That means that 250 million pounds of plastic per year has been prevented from becoming part of the waste stream.
- When McDonald's reduced its napkin size by 1 inch, the company prevented 12 million pounds of paper from being thrown away each year. In 1999, McDonald's switched to lighter weight packaging for two of their sandwiches, conserving 3,200 tons of boxboard containers.
- State Farm Mutual Auto Insurance converted to electronic cameras for their claims processing, saving more than 50 tons of instant and 35mm film.

(Source: EPA, 1996, 1999)



In addition to reducing the amount of materials in the solid waste stream, reducing waste toxicity by selecting nonhazardous or less hazardous materials for manufacturing is another important component of source reduction. Using less hazardous alternatives for certain items

(e.g., cleaning products, pesticides), sharing products that contain hazardous chemicals instead of throwing out leftovers, reading label directions carefully, and using the smallest amount of a chemical necessary are some ways to reduce waste toxicity. (See the Teacher Fact Sheets titled *Solid Waste* on page 47 and *Hazardous Waste* on page 51 for information on safe household hazardous waste practices.)

Source reduction is a challenge requiring creativity and ingenuity, but devising ways to prevent waste can be very satisfying and even fun! There are many ways consumers can practice source reduction. Here are just a few examples:

- Choose products that do not use excessive packaging.
- Buy remanufactured or used items.
- Buy items in bulk rather than multiple, smaller packages to decrease the amount of packaging waste created.
- Maintain and repair durable items.
- Reuse bags, containers, and other similar items.
- Borrow, rent, or share items that are used infrequently.
- Donate items instead of throwing them out.
- Leave grass clippings on the lawn (**grasscycling**) or use them for **back-yard composting**.
- Rake fallen leaves for composting rather than bagging them and throwing them away.

What Are the Benefits of Source Reduction?

Reducing waste at the source is the ultimate environmental benefit. It means waste does not have to be collected, handled, or processed in any way, which prevents pollution, saves energy, and saves money. In addition, by reducing consumption, fewer products are manufactured, thus reducing the impacts that manufacturing can cause. For example, by manufacturing less, **greenhouse gas** emissions are reduced, which can make a difference in preventing **global climate change**.

Preventing waste also can mean economic savings for communities, businesses, schools, and individual consumers. Many communities have instituted "pay-as-you-throw" waste management systems in which people pay for each can or bag of trash they produce that requires

disposal. When these households reduce their waste at the source, they create less trash and, consequently, pay a lower trash bill.

Businesses also have an economic incentive to practice source reduction. Manufacturing costs can decrease for businesses that reduce packaging, which can mean a larger profit margin and savings that can be passed on to the consumer.

Schools also can share in the economic benefits of source reduction. Buying products in bulk frequently means a savings in cost. Often, what is good for the environment is good for the pocketbook as well.

What Are the Challenges of Source Reduction?

Practicing source reduction is likely to require some change in daily routines. Changing some habits may be difficult, but the environmental returns on the effort can make it worthwhile. For example, while using disposable utensils might be convenient, using durable flatware saves resources and requires only slightly more effort (for cleaning). On the other hand, if waste is not reduced, the economic and social costs of waste disposal and the environmental impacts throughout the life cycle of products will continue to grow, and it will become increasingly harder to make decisions about waste management.

Even if consumers decide to change their consumption habits, products with minimal packaging and nontoxic ingredients are not always available. Balancing the immediate convenience of easily available products with the long-term benefits of waste prevention will be an ongoing commitment.

What Are Some Emerging Trends in Source Reduction?

Many companies are becoming more involved in source reduction by remanufacturing and reusing components of their products or the entire product. A toner cartridge for a laser printer is an example of a product that once

was disposable but now is manufactured to be reused. Many products are manufactured to use “modular,” or replaceable, units.

One manufacturer of photocopier machines takes back and remakes equipment from more than 30,000 tons of used photocopiers. Parts from returned machines that meet internal criteria for manufacturing are reprocessed into new products. Parts that do not meet remanufacturing criteria and cannot be repaired are often ground, melted, or otherwise recycled into basic raw materials. The company estimates annual savings of several hundred million dollars in raw material, labor, and disposal as a result of design changes and product return programs.

Other companies are also taking advantage of more environmentally preferable ingredients as ways to reduce the weight of packaging. Some supermarkets across the country have instituted shelf-labeling programs to highlight products with less packaging or less toxic ingredients. Purchasing these items shows manufacturers that consumers encourage and support source reduction.

How Can You Help?

Students can play an important role in protecting the environment by practicing source reduction. Here are some simple practices to help prevent waste:

- Donate old clothes and other household items so they can be reused or sold for reuse.
- Consider taking a thermos of juice to school instead of individual disposable containers.
- Use concentrated products to get more product with less packaging.
- Use double-sided copying and printing features.
- Buy pens, pencils, toothbrushes, and other items with replaceable parts.



- Use a durable lunch container or bag instead of a disposable one.
- Consider using environmentally preferable cleaning products instead of those that contain potentially toxic ingredients.
- Consider buying items that have been remanufactured or can be reused, such as toner cartridges for the printer or tires for the car.
- Encourage companies to reduce unnecessary packaging and the use of hazardous components in products. Many companies offer toll-free numbers and Web sites for these comments.
- Compost cafeteria food waste and use the finished compost to mulch the plants and trees around the school grounds.

Additional Information Resources:

Visit the following Web sites for more information on source reduction and solid waste:

- U.S. Environmental Protection Agency (EPA): <www.epa.gov>
- U.S. EPA, Office of Solid Waste site on source reduction: <www.epa.gov/epaoswer/non-hw/muncpl/reduce.htm>
- U.S. EPA, Office of Solid Waste site on global climate change and waste reduction: <<http://yosemite.epa.gov/oar/globalwarming.nsf/content/actionswaste.html>>
- Reuse Development Organization: <www.redo.org>

To order the following additional documents on source reduction and municipal solid waste, call EPA toll-free at (800) 490-9198 or look on the EPA Web site <www.epa.gov/epaoswer/osw/publicat.htm>.

- *Planet Protector's Club Kit* (EPA530-E-98-002)
- *A Collection of Solid Waste Resources* on CD-ROM
- *Reusable News* newsletters
- *National Source Reduction Characterization Report for Municipal Solid Waste in the United States* (EPA530-R-99-034)
- EPA's WasteWise program puts out *Bulletins* and *Updates* that deal with source reduction. To obtain applicable issues, call the WasteWise helpline at 800 EPA-WISE (372-9473) or visit the Web site at <www.epa.gov/wastewise>.